survival (LPFS) rate was 75.8% at median follow-up of 19 months, and 1- and 2-year LPFS was 93.8%, 73.2% respectively. Overall survival was relatively worse, 90.8% at 1 year and 51.9% at 2 year, because most of patients had a medical problem in lung or heart. While all patients developed grade 1 radiation pneumonitis within 3 months of SRS treatment, none developed symptomatic or serious late complications.

Conclusions: The results demonstrate that fractionated SRS on consecutive days was both effective and convenient for treating technically operable, but medically inoperable patients with early stage NSCLC. This treatment appears to offer comparable local disease control without serious complications.

Novel Therapeutics: Surgery: RFA Etc.

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Multimodal treatment (Surgery and Radiofrequency Thermoablation) of pulmonary metastases

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Introduction: The surgical treatment of pulmonary metastases is a procedure of proved therapeutic effectiveness, with a 5 years survival rate ranging from 20 to 40%. In the last years we proposed, as an alternative approach, radiofrequency thermal ablation of pulmonary metastases to patients not considered surgical candidates.

Materials and Methods: From 1990 to the 2006 we performed 138 surgical resection in 118 patients with pulmonary metastases (20 patients were operated two times). The range of the disease free interval between the presentation of the primary tumor and that of metastases (DFI) was of 28,68 months (range 0-19 years). The patient's age range was 21-80 years (average 50,1). We removed 219 metastases (average 1,58; range: 1-7), all confirmed by hystological examination. The size of the lesions ranged from 1 to 8 cm, (average 2,58 cm). The average hospital stay was 8,1 days (range 6-24); we estimated also the post-operative pain and the complication rate (25 cases, 18.1% respectively). We did not observe any intra-operating mortality. From 2003 to 2005 24 patients (average age 69,5 years, range 66-75 years) with pulmonary metastases (maximum diameter 3,5 cm.) not considered surgical candidates, underwent CT guided percutaneous radiofrequency thermal ablation (RF). All these patients underwent a CT/PET examination pre-treatment, repeated within 24h from the thermoablation in one day-surgery.

Results: The DFI was of 8,74 months (range 0-27 months), while average survival after surgical resection was of 24,37 months (range 2-10 years). Until today 30 patients are alive, with an average follow-up of 65,8 months (range 12 months-15 years); only one patient had disease recurrence. The 1 year survival rate was 76.2%, the 3 years 44.1%, the 5 years 28.3% and the 10 years 16,2%. We considered several prognostic factors: hystology, DFI, number of metastases, number of resections, lesion mono/bilaterality, type of resection and the diameter of the metastases. The data regarding patients treated with RF are preliminary. The treatment in 100% of the cases was feasible and safe, with no significant morbidity or mortality. The six months survival rate was 100%, the 1 year 75% and the 3 year 12,5%. The use of the CT/PET fusion imaging after the procedure always evidenced the absence of metabolic activity in the treated metastatic lesion.

Conclusions: The surgery of the pulmonary metastases is today a valid procedure for patients at M1 stage with good general and respiratory conditions and with an effective control of primary tumor. The percutaneous radiofrequency thermal ablation could be an important alternative for the treatment of pulmonary metastases in patients not considered to be surgical candidates.

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Correlation with PET-CT/ follow up CT for primary and metastatic lung cancers treated with cryoablation

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Purposes: The aim of this study was to evaluate the diagnostic efficacy of positron emission tomography (PET)/computed tomography (CT) in the detection of residual tumor after cryoablation of pulmonary tumors regardless of primary or metastatic lesions.

Materials and Methods: Eight patients with 10 lesions (mean size: 4.9 cm) were evaluated in this study. Total 25 procedures of cryoablation were preformed and 23 PET/CT examinations (including pre and post ablation) were analyzed. The patients had PET/CT before and after ablation using [18F]-2-fluoro-2-deoxy-D-glucose. CT images were interpreted, not correlated with the results of PET-CT scan. PET-CT images were also evaluated and measured SUV (1hr, 2hr, retention index were acquired. We acquired the percent change of SUV according to the following equation; RI (Retention Index) = (SUV 1h-SUV2h)x100/ SUV 1h The accuracy for detection of residual tumor by the different imaging modalities following ablation was assessed.

Results: Eight patients with a mean age of 64.8 (range 52-73) years were reviewed. The histopathology was primary lung cancers (8, squamous -6, adenocarcinoma -2, metastatic cancers (2, from rectum and trachea). The mean follow-up period was 194 days. Two patients had residual tumor after ablation, six patients were revealed near total cavitation developed and no evidence of hypermetabolic foci in the cavitary lesion on 2nd follow up PET/CT The above finding were correlated with enhancing solid component on enhanced CT scan within 2 weeks of PET-CT scan. The difference of the HU between pre and post CE study were correlated with SUV (standardized uptake value) for the target lesion on PET-CT.

Conclusion: PET-CT has potential roles in the evaluation for the residual viable tumors after cryoablation and has been proved to be superior to CT alone when assessing the pulmonary malignant lesions after cryoablation.